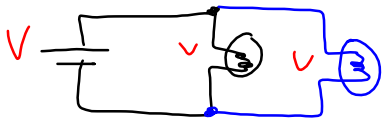
1. What happens to the brightness of the lightbulbs in the following circuits:

a) 

$I = \frac{V}{R}$

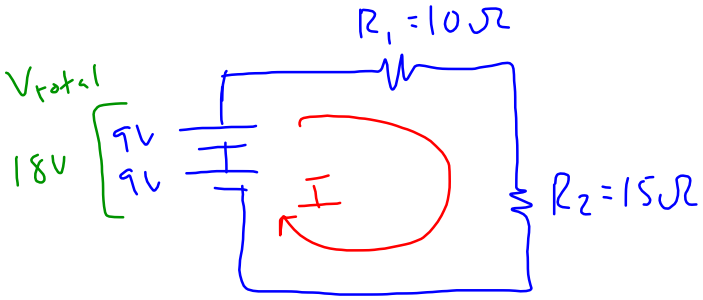
b) 

2. Draw the following circuit: TWO 9V batteries, with a 10-ohm and 15-ohm connected in series.

a) Calculate total resistance.

b) Calculate current.

c) Calculate voltage across each resistor.



$$R_{total} = R_1 + R_2$$
$$= 10\Omega + 15\Omega$$
$$= 25\Omega$$

$$I = \frac{V_{total}}{R_{total}}$$

$$= \frac{18\,V}{25\,V}$$

$$= 0.72\,A$$

$$V_1 = IR_1 = (0.72\,A)(10\Omega) = 7.2\,V$$

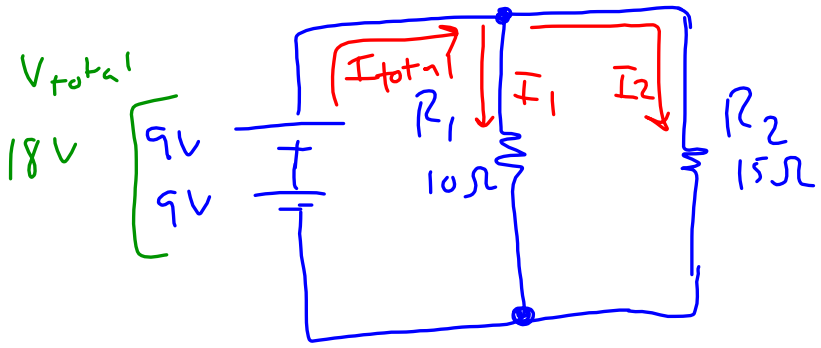
$$V_2 = IR_2 = (0.72\,A)(15\Omega) = 10.8\,V$$

$18\,V$

TWO 9V batteries (in series) are connected in parallel with a 10-ohm and 15-ohm resistor.

a) Find the current in each branch.

b) Find the total current in the circuit.



$$I_1 = \frac{V_{total}}{R_1} = \frac{18\,V}{10\,\Omega} = 1.8\,A$$

$$I_2 = \frac{V_{total}}{R_2} = \frac{18\,V}{15\,\Omega} = 1.2\,A$$

$$I_{total} = 1.8\,A + 1.2\,A = 3.0\,A$$